The Wobbly Oscillator

Cuyahoga Amateur Radio Association

November/December 2025 Volume 55 Number 11

Hams Who Serve

Meeting November 11h

Busch Funeral Home Community Room

CARS ELECTIONS

Holiday Party Dec. 12th

From the Prez

Toby, WT8O

Election of Officers

We will be holding our annual election of officers and even-year Board members at the November meeting. The nominations held in October were pretty sedate, with the current slate nominated and no new members added. Those included our president, Toby, WT8O; vice president, John, NU8Y; secretary, Matt, NU8H; treasurer, Matt, KE8OZU, and even-year Board members Scott, AC8NW; Mark, WJ8WM, and Joe, KD8BAL.

Our bylaws stipulate the November election shall consist of those nominated in October. However, in an effort to give all members an opportunity to serve, we have been allowing nominations, including self-nominations, up to the actual election if those present at the November meeting approve.

Please consider any other member, including yourself, that may be added to the possible selections for 2026 officers or Board members.

Meeting and Net Time

We have been discussing the possibility of changing the starting times of the monthly club meetings and the weekly nets. As of now, the meetings start at 7:30 and the nets begin at 9:00.

The most popular suggestions are to have the meetings start at 7:00 and the nets at 8:00. We will continue this dis-

cussion at the next meeting and on the nets. If you have not been part of these discussions and have an opinion about changing the starting times, or wish to keep them the same, please contact me with your thoughts.

Obviously, we won't change the meeting time until January, but the net time could change before the winter weather sets in.

Amateur Radio Emergency Preparedness Act

Here is one last call out to all hams to notify their congressional representatives to pass the ***Amateur Radio Emergency Preparedness Act*** in an effort to prevent restrictive Home Owners Association rules prohibiting the installation of amateur radio antennas. The ARRL makes it easy for members, and all amateurs, to send a letter to their representatives and senators by going to **https://www.arrl.org/HOA** and entering their call sign and hitting the "submit" button.

The above link makes it possible to send a prewritten letter urging your congressperson to vote for the passage of both of the bipartisan bills - H.R. 1094 in the House and S. 459 in the Senate. The process is simple and only takes a few seconds. The link also provides much more detailed information.

So please consider letting the ARRL assist you in supporting these two bills and perhaps letting other amateurs who are not CARS members be aware of the process.

Toby., W9TBO

Speaking of Emergency Preparedness...

ARRL sent the following reminder ahead of scheduled contests during the last weekend in October. Hurricane Meilissa continues to be a threat, and hams should refrain from transmitting on the designated emergency frequencies. You might want to monitor those frequencies, however. ARRL noted:

Important Notice: Emergency Frequencies — Keep Clear During Contest Weekend

As the Caribbean faces potential hurricane impacts, IARU Region 2 has activated emergency nets on the following frequencies:

40 meters: 7.198 MHz and 7.098 MHz
20 meters: 14.198 MHz

If the Hurricane Watch Net (HWN) activates, they will be operating on:

14.325 MHz
7.268 MHz

The amateur radio station at the National Hurricane Center, WX4NHC, will also be monitoring the HWN frequencies for real-time weather and situation reports.

This weekend coincides with the CQ World Wide SSB Contest, one of the busiest times on the bands. All operators are urged to exercise extra vigilance and avoid transmitting on or near these emergency and hurricane watch frequencies.

These nets are providing critical communication links supporting the Caribbean Islands and affected regions. Please ensure they have clear and reliable access to designated frequencies.

In summary:

- Keep clear of 7.198, 7.098, 7.268, 14.198, and 14.325 MHz
- Be aware of possible emergency or health-and-welfare traffic on nearby frequencies
- Operate responsibly and help maintain open frequencies for those supporting hurricane response efforts.

October Meeting Minutes

LOCATION - The meeting was held on October 14th at the Busch Funeral Home, located on Ridge Road in Parma, Ohio.

CALLED TO ORDER - President Toby Kolman, WT8O, called the meeting to order at 7:30 PM.

PLEDGE OF ALLEGIANCE - Those present pledged allegiance to the flag of the United States of America.

INTRODUCTIONS - Those present introduced themselves. The meeting had 27 attendees, including Therese, KF8EZS who was newly licensed following the VE exam at the Cleveland Hamfest.

MEETING MINUTES - The September minutes, as published in the October issue of the *Wobbly Oscillator* (*WO*), were approved.

TREASURER'S REPORT - Matt Perlman, KE8OZU, was not present. Toby Kolman, WT8O gave an update on the club's finances. No issues were reported.

PRESIDENT'S REPORT - Toby Kolman, WT8O, reported the following:

·Welcome guests

·Parking at Busch

·Toby, WT8O shared an update on the Amateur Radio Emergency Preparedness Act and encouraged those present to follow links provided by ARRL to submit letters of support for both the House and Senate bills (See From The Prez, above).

·Toby, WT8O reported on the success at the Cleveland Hamfest. The club had multiple tables and was able to sell gear that was donated or on consignment. It was also an opportunity to promote CARS, its activities, and licensing and Morse code classes..

VP REPORT - John Dernar, NU8Y, reported the following:

CARS business cards - John printed some business cards to help promote the club. He left some samples on the sign-in table for people to look at. Please share any feedback you have on them with him.

CARS iron-on logos - Previously, we explored purchasing clothes with our logo on them; however, this has proven more challenging than expected. The club is now looking at ordering some iron-on logos so people can apply them at home to clothes of their choice. The current pricing would be $2. Contact John if you are interested.

SECRETARY REPORT – Members and guests were reminded to sign in on the sign-in sheet.

PUBLIC SERVICE - Chuck, K8CVM, shared that all CARS members are invited to the local ESG/ARES meetings. The meetings are held on the third Tuesday at 7:00 PM each month, typically at the Helwig Whistle Stop. Visit https://n8esg.org/ for details. The October meeting is the last meeting for 2025. The following are upcoming events that need volunteers:
AC Strides Walk at Wade Oval on Oct. 25th.

VE UPDATE: Metro, W8MET, shared that there is a VE session is Sunday, November 9th at 9:00 a.m.

PROGRAM COMMITTEE - Joe, KD8BAL, reported that:
This month's presentation is a mentoring session on antennas presented by Toby, WT8O.
The session in November will be on NASA and the Civil Air Patrol.

TECH COMMITTEE - Scott, AC8NW, didn't have any updates to share.
OLD BUSINESS - Toby, WT8O, led a discussion on the following:

- The first few mentoring sessions will be held during the October and November meetings. *WO* articles will accompany the presentations.
- Used equipment is still available. The club is also working on an eBay account to help sell items online.

NEW BUSINESS - Toby, WT8O, led a discussion on the following:

Nominations for officers and even-year board members were opened. Current officers .Scott, AC8NW; Mark, WJ8WM; and Joe, KD8BAL were nominated and seconded.

A discussion of meeting and net start times followed. Toby, WT8O noted that some members had raised the question of starting meetings at 7:00 p.m. instead of the current 7:30 p.m. and moving on-air nets to 8:00 p.m. Some members pointed out changing net times could present conflicts with other active nets. Discussions will continue, and additional member input is invited.

Two new net controls have been added: Mark, KC8ESG and Al, KF8BCC.

A brief discussion was held about making videos of mentoring and other presentations at meetings. It was agreed to try this, and the October presentation on antennas will be the first.

CARS maintains a library of donated books which are available for loan to any member.

REFRESHMENT - Thank you to John, NU8Y; Mark Rosewicz, KC8ESG; Matt, NU8H

NEXT MEETING - The Cuyahoga Amateur Radio Society's next meeting will be held on November 11th at the Busch Funeral Home, located on Ridge Road in Parma, Ohio.

ADJOURNMENT - Toby, WT8O, adjourned the meeting.

50/50 Drawing - Kyle, KF8DXR, won the 50/50 drawing

Yuri's New Antenna

Toby, WT8O

During the spring and summer David, AC8TN, and I have been helping fellow CARS member Yuri, W4YSW,

install his antennas. We chimney mounted his VHF/UHF not long after the weather broke. The result allowed Yuri to get into the nets on RF.

Yuri became anxious to get on HF and try his new Yaesu FT DX 10. We considered the usual options of dipoles, end-feds, or verticals. A dipole or end-fed is usually the first consideration because of simplicity and cost. Both types require a support system, usually a tree or trees. Yuri's lot is bordered on one side by pine trees; plenty of tall, living lumber, but inconvenient for antenna hanging. Yuri researched and investigated different antenna styles and decided on a vertical.

He purchased a Greyline Performance vertical dipole that does not require the usual ground mounted radials most verticals use. He had a concrete base poured in his backyard and sent David and I the assembly and installation instructions which were quite clear saying it should only take a couple hours to get it up and running.

David and I went to Yuri's early expecting to be on the air that afternoon. We came with the tools we figured we would need including a trenching machine to bury the feedline. We set up shop on a portable table near the concrete base and began laying the components out. We were all very impressed with the quality of the antenna when we unpacked it, noting the heavy walled tubing and the first rate hardware.

By late afternoon David won his battle with the tree roots completing the trenching and buried the feed line. He ran the rest of the coax, suspended from the pine tree branches, to the house and into the shack. There was plenty of extra coax. Yuri decided it best to shorten the line. David preferred using a crimp-on connector from the kit he had at home. Meanwhile, I assembled the antenna using generous applications of anti-seize compound on the slip fit joints and the hardware. David helped me finish by wiring and mounting the tuner and finally raising the antenna into the base. At that point we called it a day.

We returned a few days later to finish the detail work and hook everything up. Everything went smoothly. We needed to use the tuner to get the SWR to an acceptable level. Once we did, we called a station operating in Wisconsin. When he came back with a good signal report, the smiles on the crew couldn't be wiped off with a belt sander.

SUCCESS!

Aboveleft: Raising Old Glory.

Right: Yuri, and David Select hardware.

David installs the coax connector.

November VE Session

The next VE testing session will be held **Sunday, November, 9th,** at 9:00 AM

Testing is at the Old Elmwood Recreation Center, 6200 Pete Wisniesky Parkway, Independence 44131. Directions and a map are on the CARS website homepage. For information or an appointment please contact Metro, W8MET, at 216-520-1320 or metro351@sbcglobal.net

As always, walk-ins are welcome.

No matter what your license class is, or how much time you have available to volunteer, your service would be welcome in a number of ways this year! Just be sure to ask any CARS officer or active public service member in our scheduled Monthly Club meetings for current volunteer information.

Special VE sessions are also be scheduled at the completion of the CARS licensing classes. Watch the Wobbly Oscillator and the CARS website for additional information about classes and special VE sessions, or contact Metro, W8MET.

Welcome New Members

There are no new members this month. CARS members are encouraged to invite other hams to participate in CARS meetings and events and to invite them to join CARS. Information on membership is located on the CARS website at: JOIN CARS

CARS Repeaters

146.820 (-) PL Tone 110.9

Analog Repeater

Main Site – Brecksville

Receive Only Site – Brunswick

Receive Only Site – Shaker Hts.

AllStar Node 47067

EchoLink Node 343470 (K8ZFR-R)

WIRES X Node 91242 Room 01242

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443.825 (+) PL Tone 131.8

Digital Yaesu Fusion

Linked to 146.820 Repeater

Brecksville

****

444.75 (+) PL Tone 131.8

Analog Repeater

Not Linked to Other Repeaters

Shaker Hts.

November/December

Net Skeds

Nov	5	KF8BCC	Dec	3	KC8ESG
Nov	12	WT8O	Dec	10	AC8TN
Nov	19	KD8ACO	Dec	17	KF8BCC
Nov	26	AC8NW	Dec	24	WT8O
			Dec	31	KD8ACO

Nets are run every Wednesday at

9:00 PM on:

146.820 (PL 110.9)

443.825(+) PL Tone 131.8

Digital Yaesu Fusion / C4FM

Linked to the 146.82 Repeater

EchoLink Node 343470 (K8ZFR-R)

Allstar Node 47067

WIRES X Node 91242-Room 01242

NOTE: Practice nets are conducted weekly on the CARS repeater. All hams are welcome to participate in the net.

The weekly nets are a good opportunity to hone your skills and meet other hams.

Net control will open the net and ask for “check ins.” You can give your callsign, name, and location and simply listen to the rest of the net, or you can join the conversation.

As you become more comfortable, you may want to try acthing as net control.

Promote Your Favorite Radio Club

We have found a supplier who can make quality CARS logos that you can iron-onto your own t-shirt, sweatshirt, or similar article of clothing. The process is very easy and only takes a few minutes. It requires a standard electric iron and an ironing board or other similar flat surface.

The logos are absolutely beautiful and are claimed to be extremely durable. The logos are approximately 3-1/2 inches in diameter. The manufacturer has detailed application instructions on their website (ninjatransfers.com).

The anticipated price is $5 for two iron-on logos.

Promote your hobby and your club. Wear your new CARS shirt proudly.

Contact me and let me know if you are interested in purchasing a few logos. If enough members show interest I will pursue this idea further.

John NU8Y

Choose your favorite style and color shirt or jacket and simply apply the CARS logo. You only need an iron and a flat surface on which to work.

CARS logos are 3 1/2 inches in diameter. (Pen is for size comparison.) Instructions are included with the iron-on logos.

December Birthdays

John Schwab, KD8AB Dec 3

Randy Goudy, KF8CFC Dec 5

Luke Liptak, KF8AZX Dec 6

Joel Chaney, K8SHB Dec 7

Mike Kemmett, KD8OUE Dec 7

Mike Dobeck, K8CKC Dec 8

Chuck Pedro, KF8AYX Dec 9

Bruno Sufka, W8BJS Dec 11

Colleen Crawford, KD8FTT Dec 12

Steve Worthington, KE8RZN Dec 12

Susan Magilavy, KF8DXV Dec 14

Andy Evridge, KD8SCV Dec 27

Next CARS Meeting

Tuesday, November 11th - 7:30 PM

Busch Community Room 7501 Ridge Rd. - Parma

Topic: Stories From NASA

Special Note For November:

The November meeting is, according to CARS bylaws, the annual election of officers.

See Website for Details - www.2cars.org

Note Holiday Party Date and Time Below

CARS Holiday Party

Friday, December 12th - 6:00 PM

The 3 Spot

13855 Ridge Rd., North Royalton 44133

See Website for Details - www.2cars.org

Mentoring Session: Antenna Basics

Guest Elmer: Toby WT8O

Antennas and feedline are the most important parts of your station.

Rule #1, if there is a Rule #1: Height is our friend..

Rule #2 is the familiar KISS—Keep It Simple.

Rule #3, CARS members are ready and willing to help.

Handheld Transceivers (HTs)

Most hams are familiar with the standard "rubber duck" antenna. These are often some of the most inefficient antennas, but their performance can be improved with the addition of a "tiger tail." This is a piece of wire 19 inches long attached as a counterpoise at the base connector of the antenna (usually with a large, round, eye terminal lug).

Other modified rubber duck antennas and telescopic HT antennas are available and will improve your signal.

Another simple solution is a magnetic-mount (mag mount) antenna designed for mobile use. They are usually small (1/4 or 1/2 wave) and can be easily positioned to optimize your signal. Stick the mag mount on a cookie sheet or other large, flat object, and you enhance the signal further by producing a ground plane effect.

Other choices include the popular J-pole design which can range from a piece of ladder line (easy to roll up and carry) to J-pole antennas made from copper tubing. There are plenty of plans for these antennas in the ARRL's QST and online.

Using an HT as a base station, your can take advantage of a more permanent antenna such as a yagi mounted on a tower or rooftop. If you use your HT in a base operating mode, a good speaker/microphone will make using the radio easier and allow you to keep the radio stationary, reducing stress on the antenna connection.

HF Transceivers

Technicians have some limited privileges on the HF bands. This is where it all began—developments for radio communications at frequencies above 30 MHz evolved in commercial, government, and amateur circles as radio grew.

Hams often discuss the HF bands by referring to wavelength—40 meters, 10 meters, 2 meters, etc. This can be confusing when the frequencies covered by these bands don't appear to have a relationship to the wavelength reference—7.0 MHz, 28 MHz, and 146 MHz, for instance.

Guest Elmer Toby, WT8O tackles one of the toughest but most fundamental topics for all hams—antennas.

Here's the simple formula to explain some of that:

The length of one radio wave is equal to 300 million meters per second. One Hertz is one cycle per second. (Frequencies were initially referred to in cycles, but this was changed to Hertz to honor RF pioneer and physicist Heinrich Hertz.) So, dividing 300 million meters by one million gives a more workable number of 300, At the same time, the 1 Hz now becomes 1 megahertz or one one millionth of a cycle (Hertz).

What does all of this have to do with antennas? Well, if you were to try to transmit at 1 MHz, a full wavelength is 300 meters. It's unlikely you'd have space for an antenna large enough to operate at that frequency. So, antennas are designed to operate at fractions of the wavelength of the frequency you are using.

The physics is complicated, but luckily there is an easy formula to help in building antennas. To determine the length in feet, the formula is 468 divided by the frequency in MHz. So, in the 40-meter band, the frequency 7.125 MHz would give us 65 and two thirds feet—roughly 66 feet.

Toby, WT8O flanked by a two-meter mag-mount on a "ground plane" provided by a cookie sheet. Behind him is a vertical J-pole antenna. Overhead is a "fan dipole." for HF.

Lert's go back to our Tiger Tail counterpoise for our 2-meter HT. The CARS repeater is on 146.82 MHz, so if we use our formula, we come up with 3.18 feet, or 38 inches. That's a half wavelength, or one meter. Our Tiger Tail, then, is a quarter wave for 2 meters .if you prefer to keep your calculations all in metric, use 143 in place of 468 (divide 143 by the frequency in MHz), and the result will be in meters.

The types of antennas are extremely varied and widely debated and discussed. It is one of the areas of amateur radio that receives a lot of attention and provides endless opportunities for experimentation.

One of the most common antenna types for HF is a center-fed dipole. This type of antenna consists of two pieces of wire, usually stretched horizontally and then attached to connectors that accept the popular PL 239 connector that is at the end of most coax feedlines used in amateur radio. But it isn't that simple. Dipoles are often mounted with the feed point high and the two ends of the wires sloping downward in what is referred to as an inverted V. Or, one end could be mounted high and one low, and the conventional horizonal dipole is now a "sloper." If space is limited, the two wires may be "folded" to form L shapes. A dipole also doesn't have to be fed from the center point.

Also popular is an end-fed half-wave antenna. These are a single wire—see our formula for lengths.

Polarization also affects radio wave propagation. The handheld transceivers discussed earlier are basically line-of-sight, and their antennas are mostly vertical. The dipole and other HF antenna types are largely horizonal to take advantage of the ground and atmosphere to propagate a signal. But, vertical antennas also have a place in HF radio communications and are often used. As with the higher frequencies, they require a ground plane, which is usually provided by "radials" extending our from the center of the antenna feed point. It's not as simple as putting a mag-mount antenna on a cookie sheet, but it's roughly the same principle.

For those who want to explore antennas further, CARS does have some books available for loan. And keep Rule #3 in mind—CARS members are ready and willing to help. This is one area where everyone is constantly learning—old hand and newly licensed. Bring your questions and solutions to meetings and make connections that will help us all advance the practice and enjoyment of our hobby.

(Reported by Perry, KB8AYQ)

Honorary Members

Any person who by nature of outstanding or meritorious contribution to the furtherance of amateur radio and the ideals of the Cuyahoga Amateur Radio Society

Robert Check, W8GC

Elected 2/10/15

Thomas Wayne, WB8N

Elected 1/10/17

Dwaine Modock, K8ME/SK

Elected 5/9/17

Toby Kolman, WT8O

Elected 10/10/17

Jerry Smith, NW9H

Elected 5/8/18

Ron Borkey, K8VJG/SK

Elected 5/14/19

Ed Stevens, WB8ROK/SK

Elected 8/10/21

Vince Bak, N8OVW/SK

Elected 11/14/23

Ron Holas, K8RJH, SK

Elected 7//8/25

Dues Notice

Matt, KE8DZV

Your 2025 CARS dues are payable on or before January 31, 2025. If you have already paid THANK YOU.
Dues can be paid in two ways:

- You can mail a check to:
  CARS
  PO Box 31264
  Independence, OH 44131-0264
- Pay in person at any CARS meeting.

Dues are $26.00 per year for regular membership. Each additional family member is $16.00.
If you are 60 yrs. or older, your dues are only $18.00 per year.
CARS will offer assistance to anyone having a hardship.
Please let me know if you have a hardship or know a member who needs help.

For Sale!

The Cleveland Hamfest was a major success for CARS and CARS members selling gear. A number of items were donated to CARS or were being handled on consignment. Members were also invited to display gear on the club table that they wanted to sell.

There is still quite a bit of gear available. We can't promise a "Black Friday" sale, but the prices ARE good.

Contact Toby, WT8O for more information.

2025 CARS Committees, Officers, Board and Trustees

CARS 2025 Committees

50/50

Chair: Andy Evridge, KD8SCV

Member: Joe Ulazewski, KD8BAL

ARRL Liaison

Chair: John Dernar, NU8Y

Audio/Video

Chair: Scott Smith, AC8NW

Audit

Chair: John Dernar, NU8Y

Members: Eddie Stevens, KD8FTS and Toby Kolman, WT8O

Awards

Co-Chairs: Toby Kolman, WT8O and Mark Moro, WJ8WM

Field Day

Co-Chairs: Chair: Toby Kolman, WT8O, Assistant Chair: Bob Robbins, K8RGI Members: David Korow, AC8TN; Andy Evridge, KD8SCV; Chuck Mehozonek, K8CVM, and Mark Moro, WJ8WM

Hamvention Bus

Chair: Eddie Stevens, KD8FTS

Historian

Chair: Toby Kolman, WT8O

Holiday Party, Summer Picnic

Chair: Al Farley, KF8BCC

Member: Mark Moro, WJ8WM

License Classes

Chair: David Noeth, KD8ACO

Members: Joel Chaney, K8SHB,; Toby Kolman, WT8O

Media Representative

Chair: Andy Evridge, KD8SCV

Membership

Chair: Toby Kolman, WT8O

Member: Matt Perlman, KE8OZU

Net

Chair: Toby Kolman, WT8O

Members: Scott Smith, AC8NW, David Korow, AC8TN, and David Noeth, KD8ACO

Newsletter

Chair: Perry Trunick, KB8AYQ

Member: Yuri Sivitski, W4YSW

Programs at Meetings

Chair: Joe Ulaszewski, KD8BAL

Members: Eddie Stevens, KD8FTS and Matt Perlman, KE8OZU

Public Service

Chair: Eddie Stevens, KD8FTS

Members: Chuck Mehozonek, K8CVM, and Arp Viiberg, K8ARP

QSL Manager

Chair: Metro Sinko, W8MET

Quartermaster

Chair: Toby Kolman, WT8O

Records Custodian

Chair: Terry Pillatt, KB8DTC

Refreshments - Coffee

Chair: John Dernar, NU8Y

Refreshments - Donuts

Chair: Matt Neely, NU8H

Refreshments - Pop

Chair: Mark Rosewicz, KC8ESG

Scholarship

Chair: Toby Kolman, WT8O

Members: Bob Robbins, K8RGI, Matt Perlman, KE8OZU, and Mark Moro, WJ8WM

Sunshine (Welfare)

Chair: Andy Evridge, KD8SCV

Technical

Chair: Scott Smith, AC8NW

Members: Mark Scoville, AD8KE, Terry Pillatt, KB8DTC, Mark Rosewicz, KC8ESG, David Noeth, KD8ACO and Mark Moro, WJ8WM

VE Exams

Chair: Metro Sinko, W8MET

Members: George Pindroh, K8KR; Fred Freer, K8IG: David Korow, AC8TN, Simpson Huston, N8UZF, Matt Neely, NU8H

Webmaster/email

Chair: Matt Perlman, KE8OZU

2025 Officers

President

Toby Kolman, WT8O

440-525-6109

wt8o@att.net

Vice-President

John Dernar, NU8Y

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Alternate Secretary:

Al Farley, KF8BCC

afarley94@yahoo.com

Treasurer

Matt Perlman, KE8OZU

216-337-1540

matt@seagem.me

CARS 2025 Executive Board

Board Chair

Mark Moro, WJ8WM

216-496-2871

Altern

ate: Arp Viiberg, K8ARP

Even Year Board Members

Scott Smith, AC8NW and Mark Moro, WJ8WM

Odd Year Board Members

Eddie Stevens, KD8FTS; Mark Rosewicz, KC8ESG, and Al Farley, KF8BCC

CARS License Trustees

K8ZFR Trustee

Toby Kolman, WT8O

W8BM Trustee

Mark Moro, WJ8WM

W8HBI Trustee

Matt Perlman, KE8OZU

The *Wobbly Oscillator* is a publication of the Cuyahoga Amateur Radio Society. Articles from this publication may be reprinted in any ham radio publication, if credit is given to this publication and the author, if known.

All submissions should be emailed to: Perry A Trunick, KB8AYQ at perry@trunick.com